Exchange Rates

AQA A-Level Economics

Determination · Floating vs Fixed · Appreciation · Depreciation · Effects · Policy

What is an Exchange Rate?

Definition:

The exchange rate is the price of one currency expressed in terms of another. It determines how much of one currency you receive in exchange for another — e.g. £1 = $1.27 means one pound buys 1.27 US dollars.

How exchange rates are quoted:

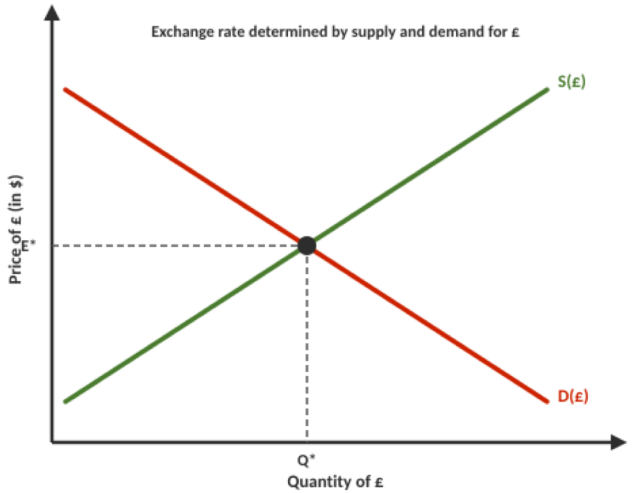
Direct quote (UK): £1 = $X. The number of foreign currency units per £1.
A rise in this number means sterling has appreciated (got stronger — buys more dollars).
A fall in this number means sterling has depreciated (got weaker — buys fewer dollars).

Effective Exchange Rate (EER):

A trade-weighted average of a currency's value against a basket of currencies — weighted by trade importance. The sterling EER gives a broader picture of competitiveness than any bilateral rate alone.

Nominal vs Real Exchange Rate:

Nominal: the actual quoted rate. Real: adjusted for relative price levels between countries — a better measure of international competitiveness. If UK inflation exceeds trading partners, the real exchange rate appreciates even if the nominal rate is stable.



Real-World Example

Sterling EER: the pound fell ~15% on a trade-weighted basis following the 2016 Brexit vote — making UK exports cheaper and imports more expensive. UK import prices rose, contributing to inflation. UK export volumes initially picked up slightly as competitiveness improved.

Determination of Exchange Rates

In a floating system, exchange rates are determined by supply and demand for the currency in the foreign exchange (forex) market. What causes each to change?

Demand for £ rises (appreciation) when:

UK exports rise — foreigners buy more UK goods/services → they need £ to pay → D(£)↑.

UK interest rates rise relative to abroad — 'hot money' flows in seeking higher returns → D(£)↑.

Foreign investment into UK (FDI, portfolio) — foreigners buy UK assets → need £ → D(£)↑.

UK inflation falls relative to trading partners — UK goods become more competitive → export demand rises → D(£)↑.

Speculation: if traders expect £ to rise, they buy now → demand rises → self-fulfilling.

e.g. BoE rate rises 2022–23: UK rates higher than EU/USA → hot money inflows kept £ stronger than fundamentals suggested.

Supply of £ rises (depreciation) when:

UK imports rise — UK residents buy foreign goods → they sell £ to buy foreign currency → S(£)↑.

UK interest rates fall relative to abroad — hot money flows out seeking better returns → S(£)↑.

UK residents invest abroad (capital outflows) — must sell £ → S(£)↑.

UK inflation rises relative to trading partners — exports fall, imports rise → net £ selling → S(£)↑.

Speculation: if traders expect £ to fall, they sell now → supply rises → self-fulfilling.

e.g. Brexit vote June 2016: massive uncertainty about future trade → speculators sold £ → sterling fell 15% in days.

Floating vs Fixed Exchange Rate Systems

Governments must choose how to manage their currency — different systems involve very different trade-offs:

Floating Exchange Rate

The rate is determined freely by supply and demand in the forex market, with no government or central bank intervention.

Automatic adjustment: a current account deficit causes currency to depreciate → exports cheaper, imports dearer → deficit corrects automatically.

Monetary policy independence: government can use interest rates for domestic objectives (inflation target) rather than defending a rate.

No need to hold large foreign currency reserves.

✗ Volatility and uncertainty: fluctuations make trade and investment planning harder. Firms face exchange rate risk.

✗ Speculation can cause 'overshooting' — rates move far beyond fundamentals.

e.g. UK: floating since 1971. Sterling has varied from $1.05 (2022) to $2.11 (2007) — huge range.

Fixed Exchange Rate

The government or central bank pegs the currency at a set rate against another currency (or basket), defending it through intervention and interest rate adjustments.

Certainty for traders and investors: eliminates exchange rate risk, reducing transaction costs for international trade.

Discipline: prevents inflationary monetary policy — government must maintain credibility of the peg.

✗ Loss of monetary policy independence: interest rates must defend the peg, not target inflation or growth.

✗ Requires large foreign reserves. Vulnerable to speculative attack if markets doubt sustainability.

e.g. UK ERM 1990–92: £ pegged to DM. Speculative attack by Soros forced UK to withdraw on 'Black Wednesday' — cost ~£3.3bn in reserve losses.

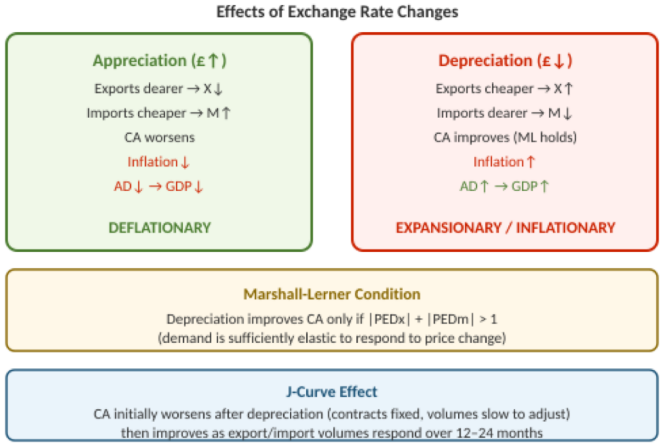
Effects of Exchange Rate Changes

Appreciation (£ gets stronger — rises in value):

Exports become more expensive in foreign currency → export volumes fall → X↓.
Imports become cheaper in sterling → import volumes rise → M↑.
Net effect on (X−M): worsens — current account deficit widens (subject to Marshall-Lerner).
Inflation falls — imported goods and raw materials are cheaper → cost-push pressures ease.
AD falls: net exports fall → AD shifts left → GDP↓ and unemployment↑ (deflationary).

Depreciation (£ gets weaker — falls in value):

Exports become cheaper in foreign currency → export volumes rise → X↑.
Imports become more expensive in sterling → import volumes fall → M↓.
Net effect on (X−M): improves — current account deficit narrows (subject to Marshall-Lerner and J-Curve).
Inflation rises — imports and raw materials cost more → cost-push inflationary pressure.
AD rises: net exports improve → AD shifts right → GDP↑ (expansionary, like a rate cut).



🌍 Real-World Example

UK 2022: sterling depreciated sharply vs dollar. Import costs (especially USD-priced energy and food) rose — contributing directly to UK inflation. A weaker £ amplified the cost-push shock from global commodity prices.

Hot Money Flows and Speculation

What are hot money flows?

Short-term capital movements seeking the highest risk-adjusted return across international financial markets. Unlike FDI (long-term investment in real assets), hot money moves rapidly in response to interest rate differentials, expected exchange rate movements, or changes in risk appetite.

The interest rate differential mechanism:

If UK interest rates rise above those of trading partners → foreign investors buy UK assets (bonds, savings accounts) → they must first buy £ → D(£)↑ → £ appreciates.
When rates fall, or expectations change, the money flows back out → £ depreciates rapidly.

Uncovered Interest Rate Parity (UIP):

In theory, the extra return from a high-interest-rate currency should be exactly offset by expected depreciation — so risk-adjusted returns equalise across countries. In practice, 'carry trades' exploit short-term deviations from UIP.

Carry Trade

Borrow in a low-interest-rate currency (e.g. Japanese yen at ~0%) and invest in a high-rate currency (e.g. UK at 5.25%). Profit = interest rate differential. Unwinds violently when conditions change — amplifying exchange rate volatility.

Speculation and Currency Crises

Speculation and currency crises:
If enough traders believe a currency is overvalued (e.g. under a fixed rate system), they all sell simultaneously — a speculative attack. The central bank must spend reserves to defend the rate. If reserves run out, the peg breaks. Self-fulfilling: belief in collapse causes collapse.

Black Wednesday 1992

UK in ERM with £ pegged near DM2.95. German reunification forced Bundesbank to raise rates. Soros and others shorted £, betting peg was unsustainable. BoE spent £15bn defending rate. Peg broke. UK devalued. Soros made ~$1bn in a day.

Real-World Example

UK post-ERM: after leaving ERM in Sep 1992, £ depreciated ~15%. UK growth accelerated in 1993–94 — freed from high interest rates needed to defend the peg. The episode showed the cost of maintaining an unsustainable fixed rate under speculative pressure.

Exchange Rates and Macroeconomic Policy

Exchange rates interact with all major macroeconomic policy tools — they cannot be managed in isolation:

Monetary Policy and Exchange Rates

Interest rate rises → hot money inflows → £ appreciates → exports dearer, imports cheaper → AD falls further. Monetary tightening thus has an exchange rate channel as well as an interest rate channel. Both reinforce each other.

e.g. UK 2022–23: BoE rate rises to 5.25% caused significant £ appreciation vs euro — helping reduce import prices and curbing inflation, but also squeezing exporters.

Inflation and Competitiveness

High inflation erodes real exchange rate competitiveness even if the nominal rate is stable. Over time, purchasing power parity (PPP) suggests nominal rates adjust to offset inflation differentials — high-inflation countries tend toward nominal depreciation.

e.g. UK 1970s: high UK inflation vs Germany meant UK exports became progressively less competitive. Sterling depreciated repeatedly — but not fast enough to fully offset the competitiveness loss.

Fiscal Policy and Exchange Rates

Expansionary fiscal policy → higher borrowing → may raise interest rates → hot money inflows → currency appreciates → exports fall → partially offsets fiscal stimulus (crowding out via exchange rate channel).

e.g. UK mini-budget 2022: unfunded fiscal expansion triggered gilt yield spike and sterling collapse — the opposite of normal crowding-in via exchange rate, because markets lost confidence in fiscal sustainability.

Current Account and Currency

Persistent current account deficits tend to put downward pressure on the exchange rate — excess supply of domestic currency from import payments. A floating rate theoretically self-corrects current account imbalances over time.

e.g. UK persistent current account deficit: sterling has trended downward in real trade-weighted terms for decades, reflecting the structural tendency toward more imports than exports.

Purchasing Power Parity (PPP)

The theory:
Purchasing Power Parity (PPP) states that exchange rates should adjust in the long run so that identical goods cost the same in different countries (when converted at the exchange rate). If a basket of goods costs £100 in the UK and $150 in the USA, the PPP exchange rate is £1 = $1.50.

Absolute PPP:
Price levels should be equal across countries when converted at market exchange rates. In practice, prices systematically differ — non-traded goods (haircuts, housing) are cheaper in poor countries (Balassa-Samuelson effect).

Relative PPP:
Exchange rates change to offset inflation differentials. If UK inflation is 3% and US inflation is 1%, sterling should depreciate ~2% per year to maintain competitiveness. A useful long-run anchor but exchange rates deviate significantly in the short run.

China PPP vs Market GDP

China's nominal GDP (market exchange rates) is ~$17tn vs USA $27tn. But on PPP basis, China's GDP is ~$33tn — larger than the USA. The market exchange rate understates Chinese living standards because non-tradeable goods are very cheap in China.

Real-World Example

Relative PPP in practice: in the 1970s, UK inflation (~15%) far exceeded Germany's (~5%). Sterling depreciated ~10% per year on average — consistent with relative PPP. The long-run relationship holds reasonably well even if short-run deviations are large and persistent.

PPP in Practice: The Big Mac Index

The Big Mac Index (Economist magazine):
A famous informal PPP measure. Compares the price of a Big Mac worldwide — converted at market exchange rates. If a Big Mac costs more in one country, its currency is overvalued vs the dollar; if cheaper, undervalued. Simple but surprisingly informative.

Why PPP matters for policy: GDP comparisons across countries should use PPP-adjusted exchange rates, not market rates — a dollar buys far more in India than the USA. The IMF and World Bank routinely use PPP adjustments.

Big Mac Index 2024

A Big Mac costs ~£3.99 in the UK and ~$5.69 in the USA. Implied PPP rate: $1.43/£. Actual rate: ~$1.27/£ → sterling undervalued by ~11% vs dollar according to this measure.

★ Bonus: The Impossible Trinity

The Impossible Trinity (Trilemma):
A country cannot simultaneously have all three of the following. It must choose only two:

Free Capital Mobility

Allowing money to flow freely in and out of the country — no capital controls. Essential for attracting FDI and portfolio investment, and for financial sector development.

Give up this: Without this: capital controls (e.g. China historically) — possible but limits financial integration and access to foreign capital.

Fixed Exchange Rate

Pegging the currency at a set value. Provides certainty for traders and investors, eliminates exchange rate risk, and imposes monetary discipline.

Give up this: Without this: floating rate — must accept currency volatility and exchange rate risk, but gain policy freedom.

Independent Monetary Policy

Using interest rates to achieve domestic objectives (inflation target, growth). Allows the central bank to respond to domestic economic conditions independently of other countries.

Give up this: Without this: must set interest rates to defend the exchange rate peg — losing control of domestic monetary policy.

Real-world examples: Eurozone: free capital + fixed rate (euro) → gave up monetary policy independence (one rate for all). China: fixed rate + monetary independence → gave up free capital flows. UK: free capital + monetary independence → floating rate (gave up fixed rate). The USA: free capital + monetary independence → floating rate.

Summary: Key Terms & Relationships

Key Term	Meaning
Exchange rate	Price of one currency in terms of another. £1 = $X. Rise = appreciation; fall = depreciation.
Appreciation	Currency rises in value — exports dearer, imports cheaper. Deflationary, worsens CA.
Depreciation	Currency falls in value — exports cheaper, imports dearer. Inflationary, improves CA (if ML holds).
Effective Exchange Rate	Trade-weighted average of a currency against a basket of partners. Better measure of competitiveness.
Real exchange rate	Nominal rate adjusted for relative price levels. True measure of international price competitiveness.
Floating exchange rate	Rate set by supply and demand. Self-adjusting but volatile. UK uses floating rate.
Fixed exchange rate	Rate pegged by government/central bank. Certain but requires reserves; vulnerable to speculative attack.
Hot money flows	Short-term capital moving between countries seeking highest return. Sensitive to interest rate differentials.
Marshall-Lerner condition	Depreciation improves CA only if |PEDx| + |PEDm| > 1.
J-Curve	CA worsens immediately after depreciation (contracts fixed), then improves as volumes adjust (12–24 months).
PPP	Purchasing Power Parity — exchange rates should adjust so identical goods cost the same across countries.
Impossible Trinity	Cannot simultaneously have: free capital flows + fixed rate + independent monetary policy. Must choose two.